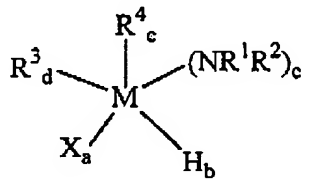
This Listing of Claims replaces all prior versions of claims in the Application.

Listing of Claims

Claim 1. (Currently Amended) A method of depositing a metal-containing film on a substrate comprising the steps of: a) conveying one or more ~~of the~~ organometallic compounds of formula I in a gaseous phase to a deposition chamber containing the substrate,



(I)

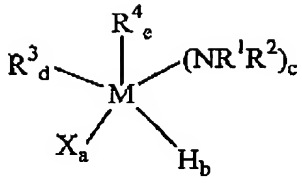
wherein M is Si or Ge; R^1 and R^2 are independently chosen from H, alkyl, alkenyl, alkynyl and aryl; each R^3 is independently chosen from $(C_1\text{-}C_{12})$alkyl, alkenyl, alkynyl and aryl, provided that R^3 is not cyclopentadienyl; each R^4 is independently chosen from $(C_3\text{-}C_{12})$alkyl; X is halogen; a = 0-3; b = 0-3; c = 0-3; d = 0-2; e = 0-4; and a + b + c + d + e = 4; wherein $R^3 \neq R^4$; wherein the sums of a + b and a + d are each ≤ 3; provided that when M = Si the sum of b + c is ≤ 3; b) decomposing the one or more organometallic compounds in the deposition chamber; and c) depositing the metal film on the substrate.

Claim 2. (Original) The method of claim 1 wherein M = Ge.

Claim 3. (Original) The method of claim 2 wherein d = 1-2 and e = 1-3.

Claim 4. (Original) The method of claim 1 wherein R^4 is branched or cyclic $(C_3\text{-}C_{12})$alkyl.

Claim 5. (Original) A device for feeding a fluid stream saturated with an organometallic compound suitable for depositing a metal film containing silicon, germanium and combinations thereof to a chemical vapor deposition system including a vessel having an elongated cylindrical shaped portion having an inner surface having a cross-section, a top closure portion and a bottom closure portion, the top closure portion having an inlet opening for the introduction of a carrier gas and an outlet opening, the elongated cylindrical shaped portion having a chamber containing an organometallic compound of formula I

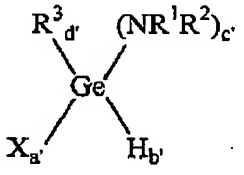


(I)

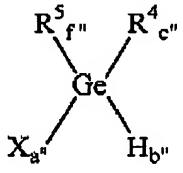
wherein M is Si or Ge; R^1 and R^2 are independently chosen from H, alkyl, alkenyl, alkynyl and aryl; each R^3 is independently chosen from (C_1-C_{12})alkyl, alkenyl, alkynyl and aryl, provided that R^3 is not cyclopentadienyl; each R^4 is independently chosen from (C_3-C_{12})alkyl; X is halogen; a = 0-3; b = 0-3; c = 0-3; d = 0-2; e = 0-4; and a + b + c + d + e = 4; wherein $R^3 \neq R^4$; wherein the sums of a + b and a + d are each ≤ 3; provided that when M = Si the sum of b + c is ≤ 3; the inlet opening being in fluid communication with the chamber and the chamber being in fluid communication with the outlet opening.

Claim 6. (Original) An apparatus for vapor deposition of metal films comprising one or more devices of claim 5.

Claim 7. (Original) A compound of formula IIA or IIB:



(IIA)



(IIB)

wherein R^1 and R^2 are independently chosen from alkyl, alkenyl, alkynyl or aryl; each R^3 is independently chosen from (C_1-C_{12})alkyl, alkenyl, alkynyl and aryl; each R^4 is independently chosen from branched and cyclic (C_3-C_5)alkyl; each R^5 is independently chosen from (C_1-C_{12})alkyl, alkenyl, alkynyl and aryl; X is halogen; a' = 0-3; b' = 0-2; c' = 1-3; d' = 0-3; a' + b' + c' + d' = 4; a" = 0-2; b" = 0-2; e" = 1-2; f " = 0-2; a" + b" + e" + f " = 4; wherein at least two of a", b" and f " $\neq$ 0; provided when a" = 1, e" = 1, f " = 2, and $R^4 = (CH_3)C$ that $R^5 \neq CH_3$; and provided that R^3 is branched or cyclic (C_3-C_5)alkyl when c' + d' = 4.

Claim 8. (Original) The compound of claim 7 wherein R^3 is branched or cyclic (C_3-C_5)alkyl.

Claim 9. (Original) The compound of claim 7 wherein e" = 1-2; f " = 1-2; and b" = 1-2.

Claim 10. (Original) The compound of claim 7 wherein d' = 1-3 and b' = 1-2.

Claim 11. (Original) A method of depositing a metal film on a substrate comprising the steps of: a) conveying the organometallic compound of claim 7 in a gaseous phase to a deposition chamber containing the substrate; b) decomposing the organometallic compound in the deposition chamber; and c) depositing the metal film on the substrate.

Claim 12. (New) The method of claim 1 wherein the organometallic compounds is chosen from iso-butylgermane and $(NMe_2)GeCl_3$.

Claim 13. (New) The device of claim 5 wherein the organometallic compound is chosen from iso-butylgermane and $(NMe_2)GeCl_3$.

Claim 14. (New) A method of depositing a metal-containing film comprising the steps of: a) providing a substrate; b) disposing the substrate in a deposition chamber; c) conveying one or more organometallic compounds in a gaseous phase to the deposition chamber, wherein one organometallic compound is iso-butylgermane; and d) depositing a metal-containing film on the substrate, wherein the metal-containing film comprises germanium.

Claim 15. (New) The method of claim 14 wherein the organometallic compound comprises one or more of silane and dichlorosilane.

Claim 16. (New) The method of claim 15 wherein the metal-containing film further comprises silicon.

Claim 17. (New) A method of depositing a multi-layer structure on a substrate comprising the steps of: a) providing a substrate; b) disposing the substrate in a deposition chamber; c) conveying iso-butylgermane in a gaseous phase to the deposition chamber; d) decomposing the iso-butylgerman to form a germanium-containing film on the substrate; e) conveying a silicon precursor chosen from one or more of silane and dichlorosilane in a gaseous phase to the deposition chamber; and f) decomposing the silicon precursor to deposit a silicon-containing film substrate.

Claim 18. (New) The method of claim 17 wherein the multi-layer structure comprises $Si_{1-x}Ge_x$, wherein x ranges from 0 to 0.50.

Claim 19. (New) The compound of claim 7 wherein the compound is $(NMe_2)GeCl_3$.